

291 Key to 5.5 - 5.9 Rev (also 5.8 & 5.9) 5.8 on last page

11. $\sqrt[5]{\frac{16}{9}} = \sqrt[5]{\frac{4}{3}}$ Need $\sqrt[5]{\frac{4}{3}}$ 13. $\sqrt[5]{-32} = -2$ 15. $\sqrt[4]{a^{16}b^8} = a^4b^2$

* 5.6 (2, 4) ⁶ (14, 18, 22), 25, 27, 30

2. $7\sqrt[4]{12} = 7 \cdot 2\sqrt{3} = 14\sqrt{3}$ 4. $\sqrt{5r^5} = r^2\sqrt{5r}$

5. $\sqrt[4]{7^8 x^5 y^6} = 7^2 x y \sqrt[4]{x y^2} = 49xy\sqrt[4]{xy^2}$

6. $3\sqrt{5} + 6\sqrt{5} = 9\sqrt{5}$

7. $\sqrt{18} - \sqrt{50} = 3\sqrt{2} - 5\sqrt{2} = -2\sqrt{2}$

14. $(5+\sqrt{2})(3+\sqrt{3})$
 $15 + 5\sqrt{3} + 3\sqrt{2} + \sqrt{6}$

18. $(\sqrt{8} + \sqrt{13})^2$
 $8 + 2\sqrt{8 \cdot 13} + 13$
 $21 + 4\sqrt{26}$

22. $\frac{\sqrt{18}}{\sqrt{32}} = \sqrt{\frac{18}{32}} = \sqrt{\frac{9}{16}} = \frac{3}{4}$

25. $\sqrt[5]{\frac{32}{a^4}} = \frac{\sqrt[5]{32}}{\sqrt[5]{a^4}} = \frac{\sqrt[5]{a}}{\sqrt[5]{a^4}} = \frac{2\sqrt[5]{a}}{a}$

~~27. $\frac{r}{r^{\frac{1}{3}}} = \frac{r^{\frac{3}{3}}}{r^{\frac{1}{3}}} = \frac{1}{r^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{r}}$~~
~~30. $\sqrt[3]{\sqrt{81}} = \sqrt[3]{9}$~~

27. ~~$\frac{5}{3-\sqrt{10}} \cdot \frac{3+\sqrt{10}}{3+\sqrt{10}} = \frac{15+5\sqrt{10}}{-1} = -15-5\sqrt{10}$~~

30. $\frac{1-\sqrt{3}}{1+\sqrt{8}} \cdot \frac{1-\sqrt{8}}{1-\sqrt{8}} = \frac{1-\sqrt{8}-\sqrt{3}+\sqrt{24}}{-7} = \frac{1-2\sqrt{2}-\sqrt{3}+2\sqrt{6}}{-7}$ OR $\frac{-1+2\sqrt{2}+\sqrt{3}-2\sqrt{6}}{7}$

5, 7, 1, 3, 5, 6, 17, 20, 21, 24, 27-29

1. $\sqrt[3]{10}$ 3. $\sqrt[3]{a^2}$ 5. $35^{1/2}$ 6. $32^{1/4}$ or $2^{5/4}$

12. $7^{9/4} \cdot 7^{4/4} = 7^{13/4} = \boxed{7}$ 20. $x^{24/3} \cdot x^{8/3} = x^{32/3} = \boxed{x^{10 \frac{2}{3}}}$

21. $m^{2/3} \cdot m^{4/3} = m^{6/3} = \boxed{m^2}$ 24. $\frac{7^{3/4}}{7^{5/3}} \cdot 7^{9/12 - \frac{20}{12}} \cdot 7^{-1/2} = \boxed{\frac{\sqrt[4]{7}}{7}}$

27. $\frac{r}{r^{2/3}} = \frac{1}{r^{2/3}} = \frac{1}{\sqrt[3]{r^2}} \cdot \frac{\sqrt[3]{r^3}}{\sqrt[3]{r^3}} = \boxed{\frac{\sqrt[3]{r^3}}{r}}$ $\frac{1}{\sqrt[4]{7^{11}}} \cdot \frac{\sqrt[4]{7}}{\sqrt[4]{7}} = \boxed{\frac{\sqrt[4]{7}}{7}}$

28. $\sqrt[4]{36} = \sqrt{\sqrt{36}} = \boxed{\sqrt{6}}$ 29. $\sqrt[4]{9a^2} = \sqrt{\sqrt{9a^2}} = \boxed{\sqrt{3a}}$

* 5.9 1, 2, 4, 8, 10, 18, 19, 24

1. $\sqrt{-289} = \boxed{17i}$ 2. $\sqrt{\frac{-25}{121}} = \boxed{\frac{5i}{11}}$ 4. $\sqrt{\frac{-28t^6}{27s^5}} = \frac{2it^3\sqrt{7}}{3s^2\sqrt{3s}}$

8. $-i^{22}$

$-(i^2)^{11}$

$-(-1) = \boxed{1}$

10.

$(14-5i) + (-8+19i)$

$\boxed{6+14i}$

$\frac{2it^3\sqrt{7}}{3s^2\sqrt{3s}} \cdot \frac{\sqrt{3s}}{\sqrt{3s}} = \boxed{\frac{2it^3\sqrt{21s}}{9s^3}}$

18. $\frac{3-7i}{5+4i} \cdot \frac{(5-4i)}{(5-4i)} = \frac{15-12i-35i+28i^2}{25-16i^2} = \boxed{\frac{-13-47i}{41}}$

19. $x^2 + 8 = 3$

$x^2 = -5$

$\boxed{x = \pm i\sqrt{5}}$

24. $\frac{7^{3/4}}{7^{5/3}} \cdot \frac{7^{9/12}}{7^{20/12}} \cdot \frac{1}{7^{1/2}} = \boxed{\frac{\sqrt[4]{7}}{7}}$

5.8 16.19

16. $\sqrt{3x+25} + \sqrt{10-2x} = 0$

$$\sqrt{3x+25} = (-\sqrt{10-2x})$$

$$3x+25 = 10-2x$$

$$5x = -15$$

$$x = -3$$

\emptyset

19. $\sqrt{5y+1} + 6 < 10$

$$\sqrt{5y+1} < 4$$

$$5y+1 < 16$$

$$5y < 15$$

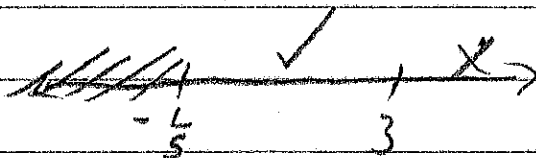
$$y < 3$$

Restriction

$$5y+1 \geq 0$$

$$5y \geq -1$$

$$y \geq -\frac{1}{5}$$



Test $\frac{8}{5}$ $3+6 < 10 \checkmark$

Test $\frac{24}{5}$ $5+6 < 10 \checkmark$

$$-\frac{1}{5} \leq y < 3$$